WHAT IS CLAIMED IS:

1. A cell voltage monitoring device for monitoring respective cell output voltages of a stack of series-connected cells, each cell having a positive output terminal and a negative output terminal, said cell voltage monitoring device comprising a plurality of differential amplifiers wherein:

   (a) each differential amplifier corresponds to a cell within the stack and has a first input connected to the positive output terminal of the corresponding cell and a second input connected to the negative output terminal of the corresponding cell;

   (b) each differential amplifier has a negative supply terminal and a positive supply terminal;

   (c) the plurality of differential amplifiers is divided into groups, each group corresponding to a set of series-connected cells within the stack;

   (d) within each group of differential amplifiers, the positive supply terminal of each differential amplifier is connected to the most positive output terminal of the set of series-connected cells corresponding to that group; and

   (e) within each group of differential amplifiers, the negative supply terminal of each differential amplifier is connected to the most negative output terminal of the set of series-connected cells corresponding to that group.

2. The cell voltage monitoring device of claim 1 wherein, within each group of differential amplifiers, the sum of the minimum expected output voltages of the corresponding set of series-connected cells is greater than the minimum required supply voltage of each differential amplifier.

3. The cell voltage monitoring device of claim 1 wherein, within each group of differential amplifiers, the sum of the maximum expected output voltages of the corresponding set of series-connected cells is less than the maximum allowable supply voltage of each differential amplifier.

4. The cell voltage monitoring device of claim 1 wherein each differential amplifier has a gain such that the maximum expected voltage output of the differential amplifier is less than its maximum voltage output capability.

5. The cell voltage monitoring device of claim 1, wherein outputs from the differential amplifiers are connected through isolator input circuitry to the inputs of corresponding isolators for converting the outputs to a common reference ground.

6. The cell voltage monitoring device of claim 5, wherein the isolators are analog isolators.

7. The cell voltage monitoring device of claim 6, wherein each of the isolators corresponds to one of the groups of differential amplifiers, and wherein the isolator input circuitry comprises an analog conditioner connected between the input of each isolator and the outputs of all differential amplifiers within the corresponding group, for reducing the number of differential amplifier outputs in each group that require isolation.

8. The cell voltage monitoring device of claim 7, wherein each analog conditioner passes to its corresponding isolator the maximum and minimum outputs of the outputs of its corresponding group of differential amplifiers.

9. The cell voltage monitoring device of claim 6, wherein the isolator input circuitry comprises direct connections between the output of each differential amplifier and the input of the corresponding isolator.

10. The cell voltage monitoring device of claim 6, further comprising an analog-to-digital converter connected to the outputs of the isolators for digitizing the outputs of the isolators.

11. The cell voltage monitoring device of claim 5, wherein the isolators are digital isolators.

12. The cell voltage monitoring device of claim 11, wherein each of the isolators corresponds to one of the groups of differential amplifiers, and wherein the isolator input circuitry comprises an analog-to-digital converter connected between the input of each isolator and the outputs of all differential amplifiers within the corresponding group, for digitizing the outputs of the differential amplifiers of the group and passing a digitized output to the isolator.

13. The cell voltage monitoring device of claim 12, wherein the analog-to-digital converter for each group of differential amplifiers is voltage referenced to the potential of the most negative output terminal of the corresponding set of series-connected cells.

14. The cell voltage monitoring device of claim 5, wherein the output of each isolator is connected via CPU input circuitry to a CPU for determining the overall cell output voltages.

15. The cell voltage monitoring device of claim 14, further comprising circuitry for signaling the CPU when the corresponding stack or group voltage falls below a predetermined threshold.

16. The cell voltage monitoring device of claim 14, further comprising software for comparing the corresponding stack or group voltage against expected values.

17. The cell voltage monitoring device of claim 14, wherein the CPU rejects overall cell output voltages when a corresponding stack or group voltage is not within an acceptable range in relation to a corresponding stack current.

18. A method of monitoring respective cell voltages of a stack of series-connected cells, each cell having a positive output terminal and a negative output terminal, comprising the steps of:

(a) measuring the respective cell voltages using a plurality of differential amplifiers, each differential amplifier corresponding to a cell within the stack; and

(b) powering the differential amplifiers using only cells within the stack.

19. The method of claim 18, further comprising the step of dividing the plurality of differential amplifiers into groups, each group corresponding to a set of series-connected cells within the stack, and wherein each group of differential amplifiers is powered using only the set of series-connected cells corresponding to that group.

20. The method of claim 19, further comprising, with respect to the dividing of the plurality of differential amplifiers into groups, the step of selecting a number of differential amplifiers for each group such that the sum of the minimum expected output voltages of the set of series-connected cells corresponding to that group is greater than the minimum required supply voltage of each differential amplifier within the group.

21. The method of claim 19, further comprising, with respect to the dividing of the plurality of differential amplifiers into groups, the step of selecting a number of differential amplifiers for each group such that the sum of the maximum expected output voltages of the set of series-connected cells corresponding to that group is less than the maximum allowed supply voltage of each differential amplifier within the group.

22. The method of claim 19, further comprising, with respect to the differential amplifiers, the step of selecting only differential amplifier circuits having a sufficiently low gain such that the maximum expected output of each differential amplifier is less than its maximum output capability.

23. The method of claim 19, further comprising the step of converting the outputs of the differential amplifiers to a common reference ground.

24. The method of claim 23, wherein the conversion is achieved by passing the outputs of the differential amplifiers through analog isolators.

25. The method of claim 24, further comprising, prior to the conversion step, analog conditioning of the outputs of the differential amplifiers to reduce the number of outputs to convert to the common reference ground.

26. The method of claim 25, wherein:
(a) each of the analog isolators corresponds to one of the groups of differential amplifiers; and
(b) the analog conditioning step comprises passing only the maximum and minimum outputs of the differential amplifiers within that group to the analog isolator corresponding to that group.

27. The method of claim 24, further comprising the step of digitizing the output of the analog isolators.

28. The method of claim 23, further comprising, prior to the conversion step, digitizing the outputs of the differential amplifiers to provide a digital output for each group of differential amplifiers, and wherein the conversion is achieved by passing the digitized outputs through digital isolators.

29. The method of claim 23, further comprising, with respect to the dividing of the plurality of differential amplifiers into groups, the step of minimizing the number of groups, in order to reduce the number of isolators required to convert the outputs of the differential amplifiers to a common reference ground.

30. The method of claim 23 further comprising the step of processing the converted outputs through a CPU to determine the cell voltages.

31. The method of claim 30, further comprising the steps of:
    (a) measuring a corresponding stack or group voltage; and
    (b) rejecting a converted output when the corresponding stack or group voltage is not within acceptable parameters.

32. The method of claim 31, further comprising signaling the CPU when the corresponding stack or group voltage falls below a predetermined threshold.

33. The method of claim 31, further comprising measuring a corresponding stack current, and wherein the rejection step involves rejecting a converted output when the corresponding stack voltage in relation to the corresponding stack current is not within an acceptable range.